

Work Order ID 68806



Page 1

Thursday, April 21, 2011 8:51:36 AM

Item ID: D206-667-203

Accept



Setup Start



Revision ID:

Item Name: Crosstube Aft

Stop



Start Date: 4/21/2011 Start Qty: 1.00



Cust Item ID:

Required Date: 4/26/2011 Req'd Qty: 1.00

Customer:

Reference:

Approvals: Process Plan: 11 Date: 11-04-21 Tooling: _____ Date: _____
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start



Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr	Revision Nbr
D206-667-243	Rev C

100



DC

Document Control

DOCUMENT CONTROL

0.00

Memo

0.00

Photocopy bluefile and create labels as per PPP D206-667-203 CHG003

Sube 127

110



CNC Bend 2

CNC Alpha 160 Bender

BENDING MACHINE - CROSSTUBES

0.00

Memo

0.00

Bend tube as per Dwg D206-667-243 using CNC bender program 206L-AF

(1)

120



QC

Quality Control

QC15- Crosstube Dimensional Check

0.00

Memo

0.00

Sube 106

(40)

SAD 11-06-06

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Work Order ID 68806

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Item ID: D206-667-203

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Revision ID:

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Item Name: Crosstube Aft

Start Date: 4/21/2011 Start Qty: 1.00



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Customer:

Reference:

Run Start



Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Stop



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

130

0.00



Crosstubes

Crosstubes

Crosstubes

Memo

0.00

1-Drill pilot holes in tube using drill Jig DT8583 & DT8584 as per Dwg D206-667-243 and drill table DT8577. Locate hole #6 for towers as per QSI 10. Drill all (3) top holes.

2-Drill and Ream all holes in tube to finish size using drill Jig DT8583 & DT8584 as per Dwg D206-667-243 Check dimensions between holes on all four sides.

3-Flip tube and switch drilling Jigs from right to left, left to right. Locate Jigs off existing holes using "T" pins.

4-Drill pilot holes using drill Jig DT8583 & DT8584 as per Dwg D206-667-243. Drill only the top (2) holes.

5-Drill & ream the top (2) holes to finish size using drill Jig DT8583 & DT8584 as per Dwg D206-667-243

6-Drill Fwd rivet holes using drill Jig DT8789FWD as per Dwg D206-667-143. Note: Fwd side has 3x top holes.

7-Drill Aft rivet holes using drill Jig DT8789 as per Dwg D206-667-243.

8-C'sink holes as per Dwg D206-667-243.

9-Scribe part # and batch # using vibrating stylus as per Dwg D206-667-243 Inside of Cuff (Do not engrave on outside of tube)

10-Deburr & Inspect for surface damage. Repair damage within limits as per

TW
SAD
11-06-06

TW
SAD
11-06-07

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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Item ID: D206-667-203

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Start Date: 4/21/2011 Start Qty: 1.00



Cust Item ID:

Required Date: 4/26/2011 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

Dwg
D206-667-243

140



HandFXtube

Crosstubes Chemical Conversion

0.00

Memo

0.00

SAD 11-06-07

①

Hand Finishing Crosstubes

150



QC

QC3- Inspect Part Finish

0.00

Memo

0.00

S u b l o b s

④

Quality Control

160



QC

QC5- Inspect part completeness to step on W/O

0.00

Memo

0.00

S u b l o b s

Quality Control

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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Thursday, April 21, 2011 8:51:37 AM



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Item ID: D206-667-203

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Setup Start



Revision ID:

Stop



Item Name: Crosstube Aft

Start Date: 4/21/2011 Start Qty: 1.00



Cust Item ID:

Required Date: 4/26/2011 Req'd Qty: 1.00



Customer:

Reference:

Run Start



Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Stop



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

170

Outsource process - NDT per QSI038 4.1

0.00



Outsource2

Memo

0.00

Outsource process - NDT

Liquid Penetrant Inspection as per QSI 038Or

Issue P/O: 14254

LPI as per ASTM 1417

Level 2 Attach copy of NDT results to work order

CL 11/06/08 (1)

180

Packaging

0.00



Packaging

Memo

0.00

Packaging

Ensure copy of NDT results attached to work order.

10/11/08 (1)

190

QC5- Inspect part completeness to step on W/O

0.00



QC

Memo

0.00

Quality Control

Ensure results are as per Dwg D206-667-243

M 11 06 21 (1) Pto ->

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: D206-667-203 PAR #: W/O Fault Category: X-Tube NCR: Yes No DQA: 11 Date: 11-07-06
 11-691 Resolution: Re-work Disposition: Re-work QA: N/C Closed: 11 Date: 11-07-06

NCR: <u>68806</u>		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
11/06/13	# 170	Found on one of cable that when drilling the hole for the nut plates the operator touched the other side inside of the cable with a drill	CP 11.06.13 PS/ur	Drill out dimple as per PSI DWG RIGHT THEN	TW 11-06-15	60 11/06/13	CP 11.06.13 PS/ur	S 11/06/13
		Bit causing a small dimple R.C. Process <u>LUA?</u> <u>TRAINING</u>	CP 11.06.13	DSI 9346 dings			CP 11.06.13	S 11/06/13

NOTE: Date & initial all entries

Work Order ID 68806

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Item ID: D206-667-203

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Setup Start



Revision ID:

Stop



Item Name: Crosstube Aft

Start Date: 4/21/2011 Start Qty: 1.00



Cust Item ID:

Required Date: 4/26/2011 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start



Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

200

0.00



SprayPaint

SprayPaint

Memo

0.00

1-Prime inside and outside crosstube as per QSI 005 4.2
2-Paint outside crosstube with White Imron as per QSI 005 4.2

PRIME:

Start Time: 10:00

Finish Time: 11:00

PAINT:

Start Time: 3:00

Finish Time: 4:30

W 11 06 21 (1)

210

0.00



QC

QC14- Inspect Spray Paint

Memo

0.00

Wrap in plastic bag to protect from scratches

Quality Control

21 11-06-22 (1)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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Work Order ID 68806

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Item ID: D206-667-203

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Revision ID:

Stop



Item Name: Crosstube Aft

Start Date: 4/21/2011 Start Qty: 1.00



Cust Item ID:

Required Date: 4/26/2011 Req'd Qty: 1.00



Customer:

Reference:

Run Start



Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Stop



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
220	Crosstubes	0.00				<i>ml</i>	<i>11</i>	<i>06</i>	<i>27</i> <i>(1)</i>
Crosstubes	Memo	0.00							
Crosstubes	1-Install nut plates as per Dwg D206-667-243.								
230	Skidtubes	0.00				<i>ml</i>	<i>11</i>	<i>06</i>	<i>22</i> <i>(1)</i>
Crosstubes	Memo	0.00							
Crosstubes	1-Install support using 0.03" to 0.06" thick layer of magnobond 6398 per QSI 015. Let cure for 12h after installation and prior to packaging. Note: (3) top holes should be facing up. A/R Magnobond 6398: <i>117510 exp: 08/2011</i> <i>Pro Seal</i>								
	2-Install supports and clamps as per Dwg D206-667-243. Torque clamps to 80-100 in lb <i>ml 11'06'27</i>								

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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NOTE: Date & initial all entries

Thursday, April 21, 2011 8:51:37 AM

[illegible][illegible]

(b) (7)(C), (b) (7)(D)

[illegible]

Reference:

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1. The first step is to identify the problem or question that needs to be answered. This involves understanding the context and the specific requirements of the task.

2. The second step is to gather relevant information and data. This can involve research, consultation with experts, or collecting data from various sources.

3. The third step is to analyze the information and data collected. This involves identifying patterns, trends, and relationships that can help in understanding the problem.

4. The fourth step is to develop a solution or answer. This involves applying the knowledge and skills gained from the previous steps to create a plan or strategy that addresses the problem.

5. The fifth step is to implement the solution. This involves putting the plan into action and monitoring the progress to ensure that the solution is effective.

6. The sixth step is to evaluate the results. This involves assessing the outcomes of the solution and determining whether they meet the requirements of the task.

7. The seventh step is to communicate the results. This involves sharing the findings and conclusions with the relevant stakeholders and providing feedback on the process.

8. The eighth step is to reflect on the process. This involves thinking about what worked well and what could be improved for future tasks.

9. The ninth step is to document the process. This involves creating a record of the steps taken and the results achieved, which can be used as a reference for future tasks.

10. The tenth step is to review the process. This involves looking back at the entire process and identifying any areas for improvement or further research.

**Insp.
Stamp**

8 u 06/28



0.00

10/4/28 (1)

0.00

8406/75

④

Quality Control

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

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Work Order ID 68806

Thursday, April 21, 2011 8:51:37 AM



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Item ID: D206-667-203

Accept



Setup Start



Revision ID:

Stop



Item Name: Crosstube Aft

Start Date: 4/21/2011 Start Qty: 1.00



Cust Item ID:

Required Date: 4/26/2011 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

270

0.00



Packaging

Packaging

Memo

0.00

Identify and pack for shipping as per PPP D206-667-203

Location: _____

PPP Rev: _____

4/29 (1)

280

0.00



QC

Quality Control

QC21- Final Inspection - Work Order Release

Memo

0.00

*11/6/29**MF 11-06-29***POSITIVE RECALL**EFFECTIVE 11.06.13 AUTH CPRELEASED CP DATE 11.06.29★ NEED DSI FROM ENG.

ADDED DSI 9346 Rev M

CP 11.06.29

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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NOTE: Date & initial all entries

Picklist Print

Thursday, April 21, 2011 8:51:42 AM

Page 1

4

Work Order ID: 68806



Parent Item: D206-667-203



Parent Item Name: Crosstube Aft

Start Date: 4/21/2011

Required Date: 4/26/2011

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP Rev:F 05.09.01 Add holes for compatibility with Bell Skidtubes KJ/JLM
 IPP Rev:G 08-06-03 update as per DSI9415 (ECN1198) DD verified by:ec
 IPP Rev:H 08-07-18 remove thread masking in step 12 DD verified by:EC
 IPP Rev:I 08-12-15 add magnobond DD verified by:EC
 IPP Rev J 09.01.06 ECN 08-562 EC verified by:DD

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D206-667-203TRN		Manufactured	No			220	Each	2.0000	1	1			
Crosstube Turning Detail													

Location Loc Qty Loc Code

LG 1
 67388 1
 LG003 1
 67390 1

①

D2873-043 Manufactured No 220 Each 16.0000 2

Nut Plate Assembly

B# 68801

Location Loc Qty Loc Code

LG052 16
 66898 16

M 11.06.22

D2873-045 Manufactured No 220 Each 31.0000 2

Nut Plate Assembly

B# 68800

Location Loc Qty Loc Code

LG052 31
 65992 11
 67741 20

M 11.06.22

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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Picklist Print

Thursday, April 21, 2011 8:51:42 AM

Work Order ID: 68806



Parent Item: D206-667-203



Parent Item Name: Crosstube Aft

Start Date: 4/21/2011

Required Date: 4/26/2011

Start Qty: 1.00

Required Qty: 1.00

D2892-1 Manufactured No

230

Each

22.0000

2

2



Support



11.06.22

Location

Loc Qty

Loc Code

LG052

22

42785

14

62592

2

65717

6

B# 70735

D3595-063-450 Manufactured No

230

Each

78.0000

4

4



RUBBER CUSHION



11.06.22

Location

Loc Qty

Loc Code

LG

23

67353

23

LG055

55

68157

55

B# 68893

MS20601-AD4W10 Purchased No

230

Each

156.0000

14

14



RIVET



11.06.22

Location

Loc Qty

Loc Code

LG051

156

116186

3

116767

54

117193

99

MS21920-22 Purchased No

230

Each

69.0000

4

4



Clamp(per MIL-DTL-8783C)



11.06.22

Location

Loc Qty

Loc Code

LG050

69

116207

19

117279

50

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

Thursday, April 21, 2011 8:51:43 AM

Work Order ID: 68806

Parent Item: D206-667-203

Parent Item Name: Crosstube Aft

Start Date: 4/21/2011

Required Date: 4/26/2011

Start Qty: 1.00

Required Qty: 1.00

AN5-10A Purchased No 250 Each 296.0000 10 10



Bolt

Location	Loc Qty	Loc Code
ST337	296	
116924	46	
117010	50	
117313	200	



117313

AN5-32A Purchased No 250 Each 137.0000 4 4



Bolt

Location	Loc Qty	Loc Code
ST340	137	
115108	27	
115589	60	
117161	50	



115589

AN5-34A Purchased No 250 Each 84.0000 4 4



Bolt

Location	Loc Qty	Loc Code
ST340	84	
115835	4	
116003	20	
116704	20	
117010	20	
117366	20	



116704

AN960JD516 NAS1149D0563J Purchased No 250 Each 0.0000 18 18



Washer



1117591 4/26/28

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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NOTE: Date & initial all entries

Picklist Print

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Thursday, April 21, 2011 8:51:43 AM

Work Order ID: 68806



Parent Item: D206-667-203



Parent Item Name: Crosstube Aft

Start Date: 4/21/2011

Required Date: 4/26/2011

Start Qty: 1.00

Required Qty: 1.00

MS21042L5

Purchased

No

250

Each

1,218.000

4

4



Nut

10/16/28 (1)

Location

Loc Qty

Loc Code

ST300

1218

116105

458

116548

260

117441

500

116105

Thursday, April 21, 2011 8:51:43 AM

Shop Packet Print

Page 4

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

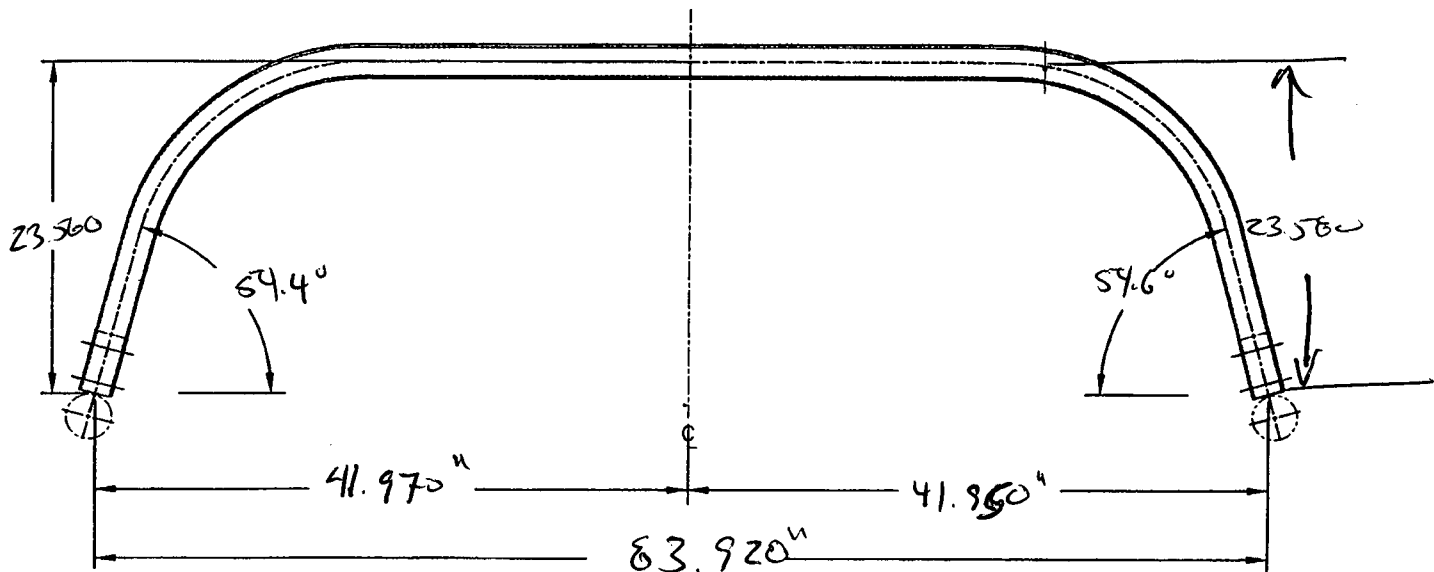
Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

DART AEROSPACE LTD	Work Order: 68804
Description: Crosstube High Aft (206L)	Part Number: D206-667-203
Inspection Dwg: D206-667-243 Rev: C	Page 1 of 1

Required Dimension	Min	Max
Height	23.39	23.65
1/2 Span	41.79	42.05
Angle	54	56
Total Span	83.58	84.1



Comments

QC15 Inspection	<i>[Signature]</i>
Date	11/06/06

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	
B	09.11.17	Dwg Rev updated	KJ	
C	09.12.14	Dimensions update per Dwg Rev C	KJ <i>[Signature]</i>	<i>[Signature]</i>

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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NOTE: Date & initial all entries

Item	Qty -243	Part Number	Description
1	X	D206-667-243	CROSSTUBE ASSEMBLY (206L HIGH AFT)
2	1	D6004-115	CROSSTUBE
3	2	D2873-043	NUT PLATE
4	2	D2873-045	NUT PLATE
5	2	D2892-1	SUPPORT
6	4	D3595-063-450	RUBBER CUSHION
7	4	MS21920-22	CLAMP
8	14	MS20601AD4W10	RIVET (OR NAS9302B-4-10)
9	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299- 947-100, TYPE II, CLASS 2 ADHESIVE)

GENERAL NOTES:

- 1) MATERIAL: MANUFACTURED FROM D6004-115
FINISHED LENGTH = 104.91±0.020
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER "D206-667-243" AND BATCH NUMBER ON
INSIDE OF CUFF USING VIBRATING STYLUS.
- 7) WEIGHT: 21.9 lbs
- 8) PART IS SYMMETRIC ABOUT CENTERLINE.
- 9) RUN CUTTER OFF PART WHERE INDICATED. BLEND OUT EDGE LONGITUDINALLY,
TRANSITION SHOULD BE SMOOTH.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 8 PASSES. MAXIMUM TUBE FLATTENING DUE
TO BENDING IS 6% BASED ON O.D.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 12) INSTALL D2892-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER
QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 13) INSTALL MS21920-22 CLAMPS WITH D3595-063-450 RUBBER CUSHIONS TO SECURE THE
D2892-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMP MECHANISMS ARE
LOCATED ON CROSSTUBE SUPPORTS.
- 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE
OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS
SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT
LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS ARE SHOWING IN
SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 68804
DS11-09-21

RELEASED
08/11/2006

C	REVISE GENERAL NOTES/PART LIST (ZN D7-1); REORGANIZED VIEWS AND REFORMATTED DRAWING TO CURRENT STANDARDS. D3595-063-450 WAS D2858-400-773 (ZN D6-2 & A5-2); REMOVED REF. & ADD TOLERANCES (ZN 4-3, C5-3, D3-3); RELOCATED FLAG #6 (ZN A8-3) PER NCR 210; MOVED TURNING DETAIL & UPDATED TOLERANCE TO SHEET 4.	RF	08.11.06
B	ADD HOLES AND NUT PLATES FOR COMPATABILITY WITH BHT/AA SKUDTUBES	PH	05.07.26
A	NEW ISSUE	CP	00.11.17
REV.	DESCRIPTION	BY	DATE
DESIGN	<u>RF</u>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	<u>RF</u>	DRAWING NO.	REV. C
CHECKED	<u>RF</u>	D206-667-243	SHEET 1 OF 4
MFG. APPR.	<u>RF</u>	TITLE	SCALE
APPROVED	<u>RF</u>	CROSSTUBE ASS'Y (206L HIGH AFT)	NTS
DE APPR.	<u>RF</u>	COPYRIGHT © 2000 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	
DATE	08.11.06		

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

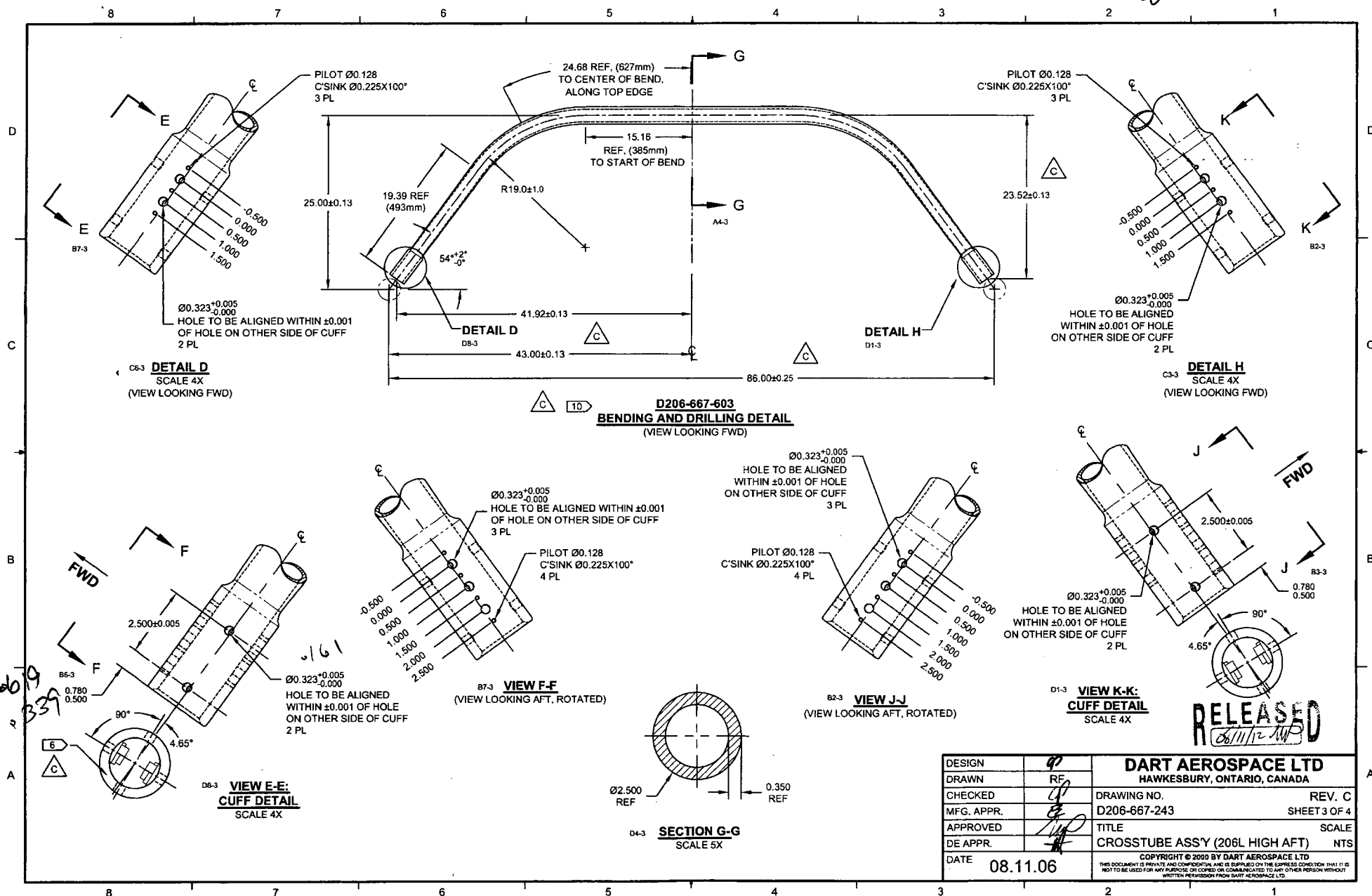
Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

W1048804



W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

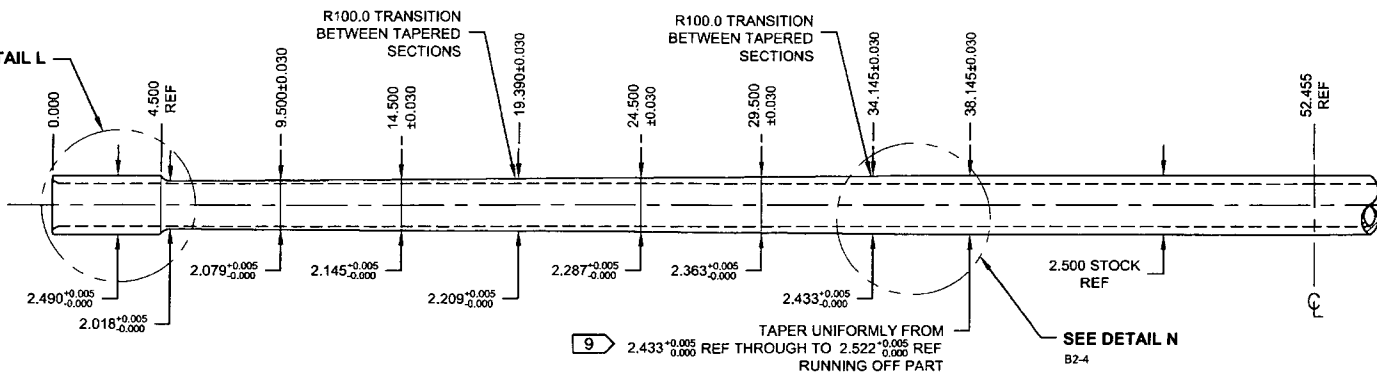
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Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

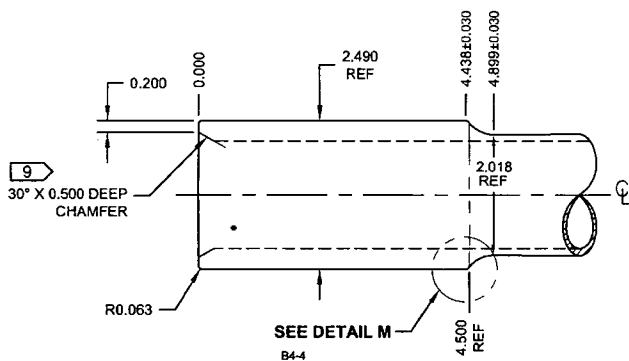
NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

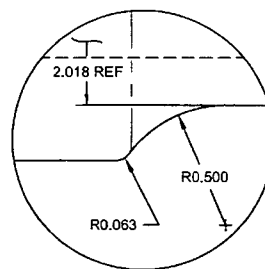
SEE DETAIL L
B7-4



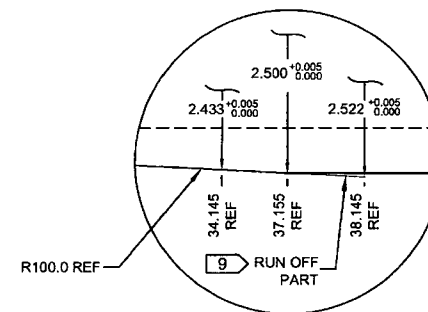
TURNING DETAIL



DETAIL L: CROSSTUBE CUFF
NOT TO SCALE



DETAIL M: CUFF TRANSITION
NOT TO SCALE



DETAIL N: TAPER RUN-OFF
NOT TO SCALE

RELEASED
08/11/12

DESIGN	9	DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	RF	DRAWING NO.	REV. C
MFG. APPR.		D206-667-243	SHEET 4 OF 4
APPROVED		TITLE	SCALE
DE APPR.		CROSSTUBE ASS'Y (206L HIGH AFT)	NTS
DATE	08.11.06	<small>COPYRIGHT © 2000 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.</small>	

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



LIQUID PENETRANT TEST REPORT

P- 05613

CLIENT

ATTENTION

ADDRESS

PROJECT

ITEM(S) EXAMINED

DATE

ACUREN JOB NO.

PO/NO.

WORK LOCATION

ACCEPTANCE STD.

PAGE

TIME

AM

PM

JOB DESCRIPTION

PROCEDURE NO.

LT

REV./DATE

TECHNIQUE NO.

LT

REV./DATE

ART NO.

MATERIAL

THICKNESS

SCOPE

TEST DETAILS

METHOD

☒ FLUORESCENT☐ VISIBLE☒ WATER WASH☐ SOLVENT REMOVABLE☐ POST EMULSIFIED

FAMILY BRAND

MAGNAFLUX

BLACK LIGHT S/N

13798

☐ OUTPUT > 1000 μ W/CM²☒ AMBIENT < 2 fc

ENETRANT

ZL-67

MINIMUM DWELL TIME

10

MIN.

LIGHTING EQUIP.

☐ FLASHLIGHT☐ TROUBLELIGHT☐ OUTPUT > 100 fc @ SURFACE

ENETRANT REMOVER

H₂O

MINIMUM DRY TIME

>10

MIN.

OTHER

DEVELOPER

SKD-52

MINIMUM DWELL TIME

10

MIN.

LIGHT METER S/N

CAL DUE DATE

12/15/2011

DEVELOPER TYPE

☒ NON AQUEOUS☐ AQUEOUS☐ DRY

TEST SURFACE

SURFACE CONDITION

☐ AS GROUND☐ AS WELDED☐ MACHINED☐ SHOT BLASTED☒ CLEAN BARE METAL

SURFACE TEMPERATURE

☐ < - 4°C/ 20°F☐ - 4°C/ 20°F TO 10°C/50°F☒ 10°C/50°F TO 52°C/125°F☐ > 52°C/125°F

RESULTS-

☐ METRIC ☐ IMPERIAL

1 CROSSTABE W.O.I.D 69762 ✓
2 " W.O.I.D 69763 ✓
3 " W.O.I.D 69356 ✓
4 " W.O.I.D 69358 ✓
5 " W.O.I.D 69357 ✓
6 " W.O.I.D 69359 ✓
7 " W.O.I.D 65806 ✓
8 " W.O.I.D 65807 ✓

ITEM ID D 212-664-101 FWD
" ID D 212-664-101 FWD
" ID D 212-664-203 AFT
" ID D 212-664-203 AFT
" ID D 412-664-203 AFT
" ID D 412-664-203 AFT
" ID D 206-667-203 AFT
" ID D 206-667-203 AFT

NO RELEVANT INDICATION WAS DETECTED
AS PER APPLICABLE STANDARD

11.06.21

Scope of Services

The agreement of Acuren Group Inc. to perform services extends only to those services provided for in writing. Under no circumstances shall such services extend beyond the performance of the requested services. It is expressly understood that all descriptions, comments and expressions of opinion reflect the opinions or observations of Acuren Group Inc. based on information and assumptions supplied by the owner/operator and are not intended nor can they be construed as representations or warranties. Acuren Group Inc. is not assuming any responsibilities of the owner/operator and the owner/operator retains complete responsibility for the engineering, manufacture, repair and use decisions as a result of the information provided by Acuren Group Inc. In no event shall Acuren Group Inc.'s liability in respect of the services referred to herein exceed the amount paid for such services.

Standard of Care

In performing the services provided, Acuren Group Inc. uses the degree, care and skill ordinarily exercised under similar circumstances by others performing such services in the same or similar locality. No other warranty, expressed or implied, is made or intended by Acuren Group Inc.

SIGNATURES

CLIENT REPRESENTATIVE

Matthew Murdoch

PRINT

SIGNATURE

DTR #

E 44675

TECHNICIAN (SIGNATURE):

J. Ves Desrosiers

NAME (PRINT):

J. Ves Desrosiers

REPORT

REVIEWED BY:

NAME

INITIALS

CGSB LEVEL

2

SNT LEVEL

2

CGSB LEVEL

2

SNT LEVEL

2

CGSB REG. NO.

3044

CGSB REG. NO.

WHITE - CLIENT COPY

CANARY - OFFICE COPY

PINK - TECHNICIAN COPY

GOLD - OFFICE COPY